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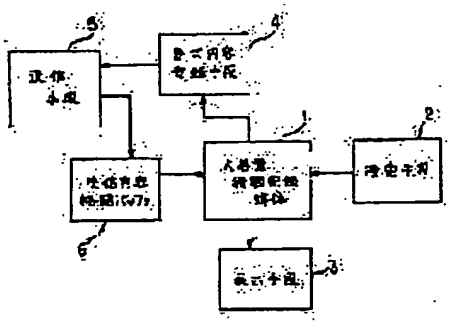
(54) PORTABLE TYPE INFORMATION TERMINAL EQUIPMENT

(57)Abstract:
PURPOSE: To provide a portable type information terminal equipment capable of obtaining always required up-to-date information.
CONSTITUTION: The portable type information terminal equipment is provided with an information recording medium 1 recording image information, sound information, character information, etc., a retrieving means 2 for retrieving required information recorded in an information recording medium 1, a display means 3 for displaying the contents retrieved by the means 2, a registering means 4 for registering information for retrieval when required information can not be retrieved by the means 2, a communication means 5 for transmitting the information registered in the means 4 and receiving required information corresponding to the registered information, and a storage means 6 for storing the information received by the means 5.



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CLAIMS

[Claim(s)]
[Claim 1] The information record medium with which image information, speech information, text, etc. were recorded, and a retrieval means to retrieve the information on the request recorded on this information record medium, In the personal digital assistant equipment which has a display means to display the contents searched by this retrieval means A registration means to register the information for retrieval when the information on desired is not able to be retrieved with the above-mentioned retrieval means, Personal digital assistant equipment characterized by providing the means of communications which transmits the registration information registered into this registration means, and receives the information on the request corresponding to this registration information, and a storing means to store the information received by this means of communications.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to personal digital assistant equipment.
[0002]
[Description of the Prior Art] DVI (digital video interactive) and CD-I (compact disc interactive) are the specification for storing and treating digital data, such as not only music but a still picture, and an animation, to CD. DVI is a basic technique for treating a dynamic image by computer, and can store in CD of one sheet current and the dynamic image compressed for a maximum of 72 minutes. One CD-I is a method for recording digital data (a still picture and an animation being included) on CD.
[0003] Image information, speech information, text, etc. are contained in bulk memories, such as CD, and that the portable player is already made by both as an experiment, and it is common in these is the point which can search and operate them in double sign further.
[0004] Especially the CD-I player announced in the electronics show in 1990 equips a body with a small electrochromatic display monitor and a small loudspeaker, and functions on it alone. Moreover, it is possible to search and operate similarly various software, such as a various-subjects lexicon, a glossy magazine, and a game, by substituting media, such as CD by which said image information, and speech information and text were packed in double sign. The basic block diagram of the conventional pocket mold player is shown in drawing 12 .
[0005] This consists of the retrieval means 8 for retrieving information on a request [record medium / 7 / this / the large capacity information record medium 7 currently recorded and / information], such as image information, and speech information, text, and a display means 9 to display the information retrieved by this retrieval means 8. Here, the mass information record medium 7 may be exchangeable title software like CD, and also has a thing using the magneto-optic disk in which a postscript/rewriting is possible.
[0006] Such a pocket mold player is equipped with a mass record medium, prepares various data into it, and has the advantage that the retrieval and the display about the interior of a medium can be performed anywhere always.
[0007]
[Problem(s) to be Solved by the Invention] However, the conventional pocket mold player which was described above had the problem that information on desired could not be acquired, when the information on desired may not exist in an information record medium and it was not able to refer to a retrieval means.
[0008] Moreover, it was not able to judge whether the information at the time of relation with said medium exterior having been intercepted although information was completed inside said medium therefore, and searching, when the information inside this medium is the information which changes every moment was the newest thing.
[0009] The personal digital assistant equipment of this invention is made paying attention to such a technical problem, and the place made into the purpose is by searching through means of communications to offer the personal digital assistant equipment which can acquire the information on desired.
[0010]
[Means for Solving the Problem] The information record medium with which, as for the personal digital assistant equipment of this invention, image information, speech information, text, etc. were recorded in order to attain the above-mentioned purpose, In the personal digital assistant equipment which has a retrieval means to retrieve the information on the request recorded on this information record medium, and a display means to display the contents searched by this retrieval means A registration means to register the information for retrieval when the information on desired is not able to be retrieved with the above-mentioned retrieval means, The information registered into this registration means is transmitted, and the means of communications which receives the information on the request corresponding to this registration information, and a storing means to store the information received by this means of communications are provided.
[0011]
[Function] That is, in the personal digital assistant equipment of this invention, the information which was not able to be retrieved is registered, and this registered information is received and stored by means of communications.
[0012]
[Example] Drawing 1 shows the basic block diagram of one example of this invention.
[0013] The mass information record medium 1 with which, as for the personal digital assistant equipment of one example, image information, speech information, text, etc. were recorded, A retrieval means 2 to retrieve the information on the request recorded on this mass information record medium, A contents registration means 4 of a

demand to register the contents of a demand, such as a keyword used for retrieval, when a display means 3 to display the contents detected by this retrieval means 2, and said retrieval means 2 are not able to detect the information on desired, It requires of an information center etc. and the receiving contents storing buffer 6 which stores the contents received by the means of communications 5 and this means of communications 5 for receiving these contents of a demand is provided for the contents of a demand registered into this registration means 4.
[0014] Here, when the mass information record medium 1 is rewritable, retrieval by the retrieval means 2 is possible by rewriting or adding the contents of the mass information record medium 1 with the one section or all of the contents that was stored in the receiving contents storing buffer 6.
[0015] moreover, the mass information record medium 1 — rewriting — case it is impossible — the retrieval means 2 — this mass information record medium 1 and this — ****** — with reference to the contents of the receiving contents storing buffer 6, it displays with the display means 3.
[0016] Moreover, the display means 3 also enables the output to an external display, a loudspeaker, a printer, etc. by voice indicating equipments, such as graphic display devices, such as a liquid crystal display, and a loudspeaker, or the external output terminal.
[0017] moreover, the means of communications 5 — the wireless systems not only cable systems, such as a dial-up line and a leased telephone circuit, but the object for telecommunication businesses, for a self-management communication link, etc. — being certain — it is and, in addition to this, optical communication also contains the mixing or superposition of the signal to a broadcasting electric-wave, infrared light, etc.
[0018] Moreover, when the contents of the mass information record medium 1 are the information which changes every moment, [for example,] The mass information record medium 1, the contents registration means 4 of a demand, means of communications 5, and the receiving contents storing buffer 6 are always operating. About the item registered into the contents registration means 4 of a demand from the mass information record medium 1 Require for every predetermined time and the item to which the receiving contents storing buffer 6 corresponds about the received contents is updated. it is always using means of communications 5 — it is — Or the item to which the mass information record medium 1 corresponds for the newest information stored in said receiving contents storing buffer 6 is rewritten. The count and time of day when it updated at, and expressed as voice or an image that updating was performed at using the display means 3, or updating was performed are recorded on the mass information record medium 1, and it displays on the display means 3 at the time of arbitration.
[0019] or the inside of the mass information record medium 1 — being appropriate — or by performing registration to the contents registration means 4 of a demand about the item by which marking was carried out The item to which the contents of said contents registration means 4 of a demand are required by means of communications 5, and the receiving contents storing buffer 6 or the mass information record medium 1 corresponds for the received newest information is updated. if updating is completed — the inside of the mass information record medium 1 — being appropriate — or the following item by which marking was carried out is registered into the contents registration means 4 of a demand one by one, and a demand, reception, and updating are repeated successively.
[0020] Or only means of communications 5, the receiving contents storing buffer 6, or the mass information media 1 is always operated, the contents of a demand are once registered into the way of the demand place of the newest information, or a reception place, the newest information is incorporated through means of communications 5, and the item to which the receiving contents storing buffer 6 and a mass information record medium correspond is always updated. Moreover, it is stored hierarchical and the information in the mass information media 1 can also be searched hierarchical with the retrieval means 2. Drawing 2 shows the external view of a portable player where the 1st example of this invention is applied.
[0021] As shown in drawing 2 (a), there is the CD-ROM storing section 11 of a closing motion type in the transverse plane of the portable player body 10, and mass CD-ROM written [text / image information, / speech information, text] in is stored in it.
[0022] A control unit 12 retrieves said information currently recorded on CD-ROM which is stored in the CD-ROM storing section 11, and which is not illustrated by inputting migration of cursor etc., an alphabetic character, a command, etc., displaying a retrieval screen etc. on an alphabetic character and the graphic display sections 13, such as a color liquid crystal display.
[0023] If the information on desired is detected as a result of retrieval, the information which corresponds from said CD-ROM will be read, an image and text will be displayed on the display of an alphabetic character and the graphic display section 13, and speech information will be displayed from the voice display 14. If the information on desired is not detected as a result of retrieval, from reception / transmitting antenna 15, the information on desired is required, said reception / transmitting antenna 15 receives the information applicable to the contents of a demand, an alphabetic character and image information without ** are displayed for the information on said CD-ROM by the alphabetic character and the graphic display section 13, and speech information is displayed in the voice output section 14.
[0024] drawing 2 — (— b —) — being shown — as — portable — a player — a body — ten — a back panel — **** — the exterior — an output terminal — 16 — using — having — **** — said — an image - an alphabetic character — an output — a video outlet — a terminal — 17 — said — a voice output — an audio — an output terminal — (— L —) — (— R —) — 18 — 18 — ' — or — a phones jack — 19 — it can carry out . Since the power source which is not illustrated is built in, it is portable.
[0025] In addition, it is good also as option addition of reception/communication devices, such as a ground wave and a satellite wave, being possible, and good also as addition with an option being possible in the

modem/communication circuit for a dedicated line and public lines. Moreover, the terminal which outputs an image and text on the display of the glasses mold which is not illustrated may be prepared.
[0026] Moreover, drawing 4 shows an external view modification. Drawing 4 is the example of a compact type Personal Digital Assistant, and the difference from drawing 2 is the point that the CD-ROM storing section 11 is united with the control unit 12. The internal-block Fig. of a portable player described above to drawing 3 is shown.
[0027] The antenna 22 which sends and receives the wireless electric wave of 1 sending-out unit on which this configuration was superimposed [text / image information, or / speech information, text, etc.] between information centres 21 etc., The transceiver circuit 23 and the data taking-in section 24 which carries out A/D conversion of said wireless electric wave received from the transceiver circuit 23, and is changed into the digital signal for one packet, Said receive buffer memory 25 which stores the above digital signal per cutting tool by one changed packet, The error correction section 26 which corrects the bit error of the digital signal for said one packet through Maine Bath 27 from this receive buffer memory 25, With the information Records Department 28 which stores all the digital signals after correction per cutting tool by this error correction section 26 The 16/32-bit host CPU 29 which manages Maine Bath 7 and the whole body system, The stored programs ROM 30, such as a system program which operates this host CPU 29 The key input section 32 which is a control unit for performing the work piece RAM 31 and retrieval which secure the work-piece field, and control, The key interface 33 for telling the key input in this key input section 32 to the host CPU 29 through Maine Bath 27, The result from which directions of retrieval or control were transmitted to the host CPU 29 from this key interface 33, Direct the control and retrieval of CD-ROM which are not illustrated from said host CPU 29, or The CD control unit 36 which reads a digital signal through the CD-ROM driver 34, and the controller/decoder 35 for CD-DA from CD-ROM which is not illustrated, The CD-ROM driver 34 which performs reading control of CD-ROM on which said image information, or a sound signal and an alphabetic signal was recorded, and which is not illustrated, Transmit the digital signal read from this CD-ROM driver 34 to said CD control unit 36 as it is, or Or according to directions of the CD control unit 36, change said digital signal into an analog sound signal, and it transmits to the audio signal processing unit 37. If it is the speech information (ADPCM was carried out) into which the controller / decoder 35 for CD-DA which performs the change control and decoding, and the digital signal transmitted from said CD control unit 36 were compressed The ADPCM decoder 38 which transmits said digital signal with directions of the host CPU 29, performs ADPCM decode

[redacted]

DA, If the digital signal read from the CD control unit 36 or the information Records Department 28 is text The character generator 39 made to generate an alphabetic character according to directions of the host CPU 29, DRAM40 which memorizes the bit map of an alphabetic character image which made it generate with this character generator 39, The video controller 41 which develops said bit map memorized by this DRAM40 as an alphabetic character image, If it is image information, such as a still picture with which the digital signal read from the CD control unit 36 or the information Records Department 28 was compressed, and a graphic The still picture, the animation, and the decoder section 42 for graphics which performs decoding of said image information according to directions of said host CPU 29, The video decoder mixer 48 which displays on coincidence the alphabetic character image which said video controller 41 outputs, and the still picture, animation and graphic image of said decoder section 42, The circumference circuit controllers 49, such as DMA which operates with directions of the host CPU 29, and a clock timer, The transmission buffer memory 50 which stores the contents of the information required of an information centre 21 etc. through the transceiver circuit 23 or an antenna 22, When the alphabetic signal acquired through the CD control unit 36 or the information Records Department 28 has an addition sound character, or when an addition sound character is given by directions of the host CPU 29, it consists of the addition sound processing section 51 which processes this. The controller / decoder 35 for CD-DA also perform an error correction here.
[0028] In addition, the above-mentioned decoder section 42 possesses the system bus interface 43 which performs an interface with the system bus 44 of the decoder section 42, the pixel processing processor 45 which elongates said image information transmitted by the CD control unit 36 and the information Records Department 28, the dual port memory 46 which stores the data elongated by this pixel processing processor 45, and the display processor 47 which performs reception, analog output, or a digitized output on a display of an indicative data and a display parameter from dual port memory 46 through Maine Bath 27. Below, order is explained for the operation later on.
[0029] CD-ROM on which the image information which is not illustrated, and speech information and text were recorded is stored in said CD-ROM storing section 11, and the depression of the power-source key of a control unit 12 is carried out. Then, the system software currently written in in the program ROM 30 starts, and the host CPU 29 controls the CD control unit 36, and starts the CD-ROM driver 34.
[0030] The CD-ROM driver 34 searchs the address with which for example, the initial menu screen is given by said CD-ROM by text, and the read digital signal is transmitted to a work piece RAM 31 from the CD control unit 36 through the controller / decoder 35 for CD-DA. As a result natural because searched the data header unit of said digital signal, or text, if the host CPU 29 decodes an alphabetic signal according to the protocol which judged that the digital signal transmitted from the aforementioned CD control unit 36 was text, and was decided beforehand and has the need, it will generate an alphabetic character from a character generator 39, and it carries out memory of the decode result of said signal on DRAM40.
[0031] According to the control signal in text etc., the host CPU controls a video controller 41 and outputs the alphabetic character image by which memory was carried out to said DRAM40 through the video decoder mixer 48.

[0032] For example, if CD-ROM by which current storing is carried out was the software package of a various-subjects lexicon, at this time, the demonstration image in which it is shown that it is for example, a various-subjects lexicon in an alphabetic character and the graphic display section 13 is displayed on the CD-ROM storing section 11, and the prompt of the waiting for the input of a keyword blinks.
[0033] Here, a keyword to search etc. is inputted from the key input section 32 (or keyword). The inputted keyword is stored on a work piece RAM 31 through the key interface 33, and by controlling the CD control unit 36, the host CPU 29 drives the CD-ROM driver 34 for the contents of the CD-ROM which is not illustrated, and searchs said keyword.
[0034] When this keyword is detected, a digital signal is read through the CD-ROM driver 34, and the controller / decoder 35 for CD-DA send out this digital data to the CD control unit 36 through.
[0035] Here, said keyword is not detected, but if it becomes clear that it does not exist in said CD-ROM, the host CPU 29 will transmit the keyword under retrieval stored in the work piece RAM 31 to the transmitting buffer memory 50. The contents of the transmitting buffer memory 50 are transmitted to an information centre 21 through the transceiver circuit 23 and an antenna 22 per 1 sending out of a wireless electric wave according to the communication link format between information centres 21.
[0036] In an information centre 21, the contents of the transmitting buffer memory 50 are received, retrieval which is not illustrated is performed, and if the contents applicable to said transmission buffer memory are found, the data which correspond according to said communication link format will be transmitted similarly.
[0037] A/D conversion of the wireless electric wave of 1 sending-out unit received by the antenna 22 and the transceiver circuit 23 is carried out in the data taking-in section 24, it is changed into the digital signal for every packet, and this digital signal is stored in the receive buffer memory 25 per cutting tool. A bit error is corrected in the error correction section 26, and, as for said data stored by this receive buffer memory 25, the digital signal after this correction is stored in the information Records Department 28. When storing of said data to this information Records Department 28 is completed, the keyword to which it corresponds on the transmission buffer memory 50 and a work piece RAM 31 is overwritten by elimination or the following keywords (or keyword etc.).
[0038] If the host CPU 29 distinguishes that the digital signal stored in the information Records Department 28 is text, when the alphabetic signal decode program within a program ROM 30 controls a character generator 39, a video controller 41, and DRAM40, an alphabetic signal will be decoded as mentioned above and a video outlet will be performed through the video decoding mixer 48. Moreover, if it is the still picture, the animation, and graphical data into which the digital signal stored in the information Records Department 28 was compressed, in a still picture, an animation, and the decoder section 42 for graphics, expanding processing will be carried out and a video outlet will be carried out through the video decoder mixer 48.
[0039] Or when text and the image information on other **** to the digital signal stored in the information Records Department 28, it is processed separately respectively, and the alphabetic character image output of a video controller 41 and the video output of a still picture, an animation, and the decoder section 42 for graphics are compounded with the video decoder mixer 48, and output the result.
[0040] Moreover, if it is the sound signal (ADPCM was carried out) with which the digital signal stored in the information Records Department 28 was compressed, this digital signal will be changed into a voice analog signal after transmitting to the ADPCM decoder 38, and will output an audio signal in the audio signal processing unit 37.
[0041] Here, the CD-ROM driver 34 is driven, when it is the sound signal with which the digital signal transmitted to the controller / decoder 35 for CD-DA from CD-ROM which is not illustrated was compressed, said digital signal is changed into a voice analog signal by the ADPCM decoder 38 after transmitting a digital signal to the CD control unit 36, and this controller / decoder 35 for CD-DA output an audio signal in the audio signal processing unit 37.
[0042] Or the CD-ROM driver 34 is driven, when it is the sound signal with which the digital signal transmitted to the controller / decoder 35 for CD-DA from CD-ROM which is not illustrated is not compressed, D/A conversion of said digital signal transmitted to this controller / decoder 35 for CD-DA is carried out to a voice analog signal, and this voice analog signal outputs an audio signal in the audio signal processing unit 37. By this, the portable player of this invention can also play common CD for music titles in the CD-ROM storing section 11.
[0043] Moreover, by carrying out character registration of the audible tone inside the addition sound processing section 51 not only as speech information but as text The key input of the key input section 32, and by controlling the CD control unit 36, when said received data are stored in the receiving buffer memory 25 As a result of searching the contents of the CD-ROM which is not illustrated, synchronizing with the time of that information is not found distinguishing etc., the audio output of the audible tone different, respectively or melody different, respectively of a tone can be carried out.
[0044] Moreover, in case it searches from the key input section 32, after retrieving the information on CD-ROM which is not illustrated with said means, it doubles, the information of the information Records Department 28 is also retrieved, and display or said two information are enabled to perform a display mutually for the newest information among the information on said CD-ROM, and the information of the information Records Department 28, as it is ****.
[0045] In the 1st example, since only the CD-ROM driver 34 only for playbacks was considered, the information Records Department 28 was prepared here, but as a mass storage medium, CD-ROM of a postscript mold, rewritable CD, a magneto-optic disk, MD, etc. are well-known, and if the mass storage medium in which these rewritings are possible is used, since the contents of this medium will be rewritten, the aforementioned information Records Department 28 and excessive retrieval actuation become unnecessary.

[0046] Moreover, although the program for alphabetic signal decode was prepared into the program ROM 30 in the 1st example, alphabetic signal decode specialized circuits (it is well-known as LSI) including a work-piece field may be used, and the addition sound processing section 51 may be made to build in in it.
[0047] In that case, since it is also possible to display a binary image only with an alphabetic signal, if it is extent which displays a map, a graph, etc., it does not interfere, even if it deletes a still picture, an animation, and the decoder section 42 for graphics from the 1st example, and simplification and a miniaturization of a circuit can be realized.
[0048] Here, a still picture, an animation, and the decoder section 42 for graphics may have the single or two or more digital signal processors from which a processing facility changes with the changes of a program, and various processings of it are attained by rewriting said program (it being called a microcode to below).
[0049] For example, it is possible to perform compression of voice and image information, expanding processing, analysis processing and processing / edit processing, or encryption / decryption processing, and to display this processing result and a process by one or more of said means.
[0050] For example, if the display processor 47 is switched with the circuit only for sound signal processings, by replacing the microcode of the pixel processing processor 45, the sound signal read and compressed from CD-ROM is elongated by the pixel processing processor 45 through the system bus interface 43, the result is stored in a dual port memory 46, and it cannot read in said sound signal processing specialized circuit, but since an audio output is obtained, the ADPCM decoder 38 will become unnecessary. Moreover, it is also possible by rewriting the microcode in said pixel processing processor 45 for various speech processing, such as speech recognition, and speech synthesis, a graphic equalizer display according to frequency band of audio analysis, to become possible, and to indicate the result by the display with an alphabetic character, a graphic form, etc.
[0051] Immediately after being prepared at each functional order into CD-ROM which the microcode given to the pixel processing processor 45 which enables various processings illustrates neither at an image processing nor audio processing, reading it by said CD-ROM driver 34 as mentioned above, giving the pixel processing processor 45 if needed and being needed, you may also incorporate by the wireless electric wave from an information centre 21 etc.

[0052] Moreover, although the wireless electric wave is received from the information centre 21 in the 1st example by using an antenna 22 and the transceiver circuit 23 as means of communications, a public line and a dedicated line may be used through a modem. Moreover, infrared light may be used as means of communications, and the digital communication of 9600bps of current is possible.
[0053] Moreover, CD-ROM in which the aforementioned postscript is possible, and the function in which said information cannot be read if it makes it possible to write information personal in the key input section 32 in said information Records Department 28, a password is set up to this information and a password is not in agreement may be added.
[0054] By the change of said microcode further again Aforementioned image information, and aforementioned speech information and text, Encryption processing of other microcode programs or other software programs is performed by the pixel processing processor 47. Or write in said information Records Department 28, or Said information which is possible also for sending out from the transceiver circuit 23 and by which encryption processing was already carried out is received from the transceiver circuit 23, and an image processing processor 45 performs decryption processing. Store in the information Records Department 28, or Display with the display means 3 connected to the video outlet outputted from the audio output or the video decoder mixer 48 outputted from the audio signal processing unit 37, or Or from the information Records Department 28, decryption processing is performed by the pixel processing processor 47, it may express as the display means 4, or may transmit from the transceiver circuit 23, or said information by which encryption processing was already carried out may be again stored in the information Records Department 28.
[0055] When decoding said enciphered information in a pixel processing processor, a password is entered from the key input section 32, unless it agrees with the password with which it was set up beforehand, the microcode program for said decode does not start, or it may start or you may make it not process completely correctly here. Moreover, starting of a microcode with this password and activation of the right perfect processing may be respectively set up in various functions.
[0056] Moreover, when a partial ROM is used for the information Records Department 28, the microcode program which performs such various functions may be secured in the field which is not rewritable, may set a password etc. as each of this microcode program, may enter this password, and may be performed by receiving a password signal from an information centre 21 by the key input section 32.
[0057] TV/radio broadcasting of a ground wave and a satellite wave may be received as an option to means of communications the tuner / IF package of terrestrial TV/radio, the antenna / converter / tuner / IF pack of satellite broadcasting service, and by adding the antenna / converter / tuner / IF / decoder pack of charged satellite broadcasting service further. (In the case of a satellite wave, there is also audio B mode broadcast) . The example of the reception pack of charged satellite broadcasting service is shown in drawing 5 and 6.
[0058] As shown in drawing 5 , an appearance consists of the flat antenna 100 which uses a converter 101 as a base and receives satellite broadcasting service, and the tuner / IF / decoder section 107 connected to the body 108 of a Personal Digital Assistant, and the converter section 101, and the tuner / IF / decoder section 107 are connected by the cable.
[0059] The internal-block Fig. of drawing 6 changes into an MHz band the RF signal received from the satellite

receiving antenna 100 from a GHz band in the converter section 101, the RF signal after this conversion tunes it in by the tuner / IF circuit 102 according to directions of the control microcomputer 106, it obtains a video outlet through the decoder section 103, carries out A/D conversion of this video outlet in the A/D section 104, and sends out an image/speech information to the data taking-in section 24. Or you may output to AV output sections, such as direct, the video outlet section of the body 108 of a Personal Digital Assistant, and the audio output section, from the decoder section 103 here.

[0060] In a channel selection, the program number is written in the transmitting buffer memory 50, and the control microcomputer 106 controls a tuner / IF102, and the decoder section 103 with reference to this.

[0061] Various processings of a data compression, an image / **** analysis, processing/edit, etc., etc. are performed by the image/voice data incorporated to the data taking-in section 24 being incorporated by the information Records Department 28 through the receiving buffer memory 25, being displayed using the display means 3, or rewriting said microcode by the pixel display processor 45.

[0062] Or a GPS Satellite receiving antenna / equipment may be added to means of communications as an option, the positional information of the antenna which won popularity as this option may be read, and the current position may be displayed on said map by using the map information received from said information Records Department 28 or said information centre 21. Next, the fundamental example of use is explained below with reference to drawing 7.

[0063] For example, the genre of the contents which a user wants to know presupposes that he wants to know the newest stock price of A company, B company, and C company, and the reservation status of an airplane about the newest forecast of Tokyo and Osaka also in each genre in order with a high priority in the case of the vacancy information on O moon x day ** facilities, and a weather report in the case of stocks noting that it is the reservation status of 1. stocks and 2. airplane, and 3. weather report.

[0064] A user presses the key of the key input section 32, and creates the genre registration screen shown in A of drawing 7 by the selection out of many menus, or the input of an alphabetic character. The means of communications 5 of the assigned number is the priority at the time of actuation, respectively. Next, the screen which registers the demand information according to genre shown in B of drawing 7 is displayed, and a weather report presupposes that it registered using the menu screen etc. in order of the location to know in order of the brand which wants to know stocks about each genre, and the facilities name which he wishes like [vacancy information] the O moon x day ** facilities of ANA, and O moon O day O facilities.

[0065] When means of communications 5 continues a communication link at any time also even in after registration screen termination, for example, after registration of said demand information is a stock price, as for the vacancy information on an airplane, the numeric data of information needed is obtained [every 20 minutes / from the computer of an air terminal] from the database of a securities firm by the means of communications 5 of this information terminal through an information centre 21 every [from a CAPTAIN service pin center,large] 3 hours every other hour, as for the case of a weather report.

[0066] Whenever said numeric data is received, a receiver updates the information in a record medium 1 about the contents, or it tells about with voice, or it displays on an image and the character representation section 13, and an applicable part is blinked. The example to which the stock quotations of A company of a stock genre reached C of drawing 8 is shown.

[0067] D of drawing 7 shows the example of processing / display for every genre of this Personal Digital Assistant. For example, in the case of the stock price, the data received were numeric data in every 20 minutes, but the closing price of the day is recorded on the information record medium 1 every day, by processing of the pixel processing processor 45 according to exchange of said microcode program in the time of the display of a stock genre, the stock price chart of the whole company may be created and even prediction and decision may be performed. Or similarly, the vacancy information on a current airplane may be received, the best course may be judged and displayed by processing of said pixel processing processor 45, and the data of a weather report may also display graphics, such as a map, intelligibly in piles. Or it is also possible to create a synoptic weather chart inside a terminal.

[0068] Here, means of communications 5 shall operate until make it possible to register the timing which receives the newest data on the demand information registration screen classified by genre of B, and spacing, it performs demand information transmission to an information centre 21 for between [every] commuter's tickets through the transceiver circuit 23, receipt information is corrected in the error correction section 26 through the data taking-in section 24 and this information is stored in the information Records Department 28.

[0069] The time of day which receives the newest data on the demand information registration screen classified by genre of said B is registered. Once to an information centre 21 or after registering the contents of a demand With reference to the timer in circumference circuit KONTORORA 49, an information centre 21 starts means of communications 5 at the setting time of day which transmits information. You may make it means of communications 5 transmit demand information until receipt information is corrected in the error correction section 26 through the data taking-in section 24 and this information is stored in the information Records Department 28.

[0070] Drawing 8 shows the appearance/block diagram of the note type information terminal as the 2nd example of this invention. The CD-ROM storing section 137 prepared in the interior of a body since this note type information terminal stored CD-ROM136 from the side face of the note type information terminal body 135. The graphic display section 138 which consists of a liquid crystal display of the color prepared in the front face of a body 135 in order to display the image information and the text which were read from this CD-ROM storing section 137, The voice output section 140 which consists of a flat-surface loudspeaker prepared in the rear face of a body 135 in order to

display the speech information read from said CD-ROM storing section 137, With reference to the image information and the text which were displayed on said graphic display section 138, by inputting the positional information corresponding to this information The control unit 139 which consists of a transparent touch panel prepared in the front face of said graphic display section 138 in order to perform retrieval of the image information for which it asks, text, and speech information, or control of the information terminal body 135, When the information for which it asks by this control unit 139 is not retrieved, in order to require said information and to receive in means of communications, such as wireless, the transceiver antenna 141 which consists of an outside metal frame shared with the body frame surrounding a body 135 is provided.

[0071] Namely, the control unit 139 to which the above-mentioned note type information terminal changes from a touch panel layer, The graphic display section 138 which changes from a liquid crystal display layer to the lower berth of this touch panel layer, The CD-ROM storing section 137 and the information terminal body 135 which change from a body layer to the lower berth of this liquid crystal display layer, It consists of transceiver antennas 141 which enclose the voice output section 140 which changes from a flat-surface loudspeaker layer to the lower berth of this body layer, and said touch panel layer, liquid crystal display layer and body layer, and a flat-surface display layer from a four way type, and consist of the outside metal frame to fix. The internal-block Fig. of a note type information terminal is shown in drawing 9 .

[0072] The host CPU 150 which has the engine performance of 16 bits or more in which this block controls the system of the whole note type information terminal, The program ROM 152 in which the system bus 151 which makes this host CPU 150 main, and the program which performs control of said host CPU 150 and decode processing of text are stored RAM153 for securing the work-piece field for performing this program, The CD-ROM driver 154 which write said information from CD-ROM which has the image information, the text, and speech information which are not illustrated, If it is said speech information into which the input/output interface 155 which outputs and inputs said information between this CD-ROM driver 154 and said system bus 151, and the information read from this input/output interface 155 were compressed The ADPCM decoder 156 which carries out expanding processing of this speech information, and the voice output section 157 which outputs the speech information by which expanding processing was carried out by this ADPCM decoder 156, If it is said image information into which the voice output controller 158 which controls the voice output of this voice output section 157, and the information read from said input/output interface 155 were compressed If the image decoder section 159 which carries out expanding processing of this image information, the graphic display section 160 which displays this image information by which expanding processing was carried out, and the information read from said input/output interface 155 are text CGROM161 which generates an alphabetic character according to directions of said host CPU 150 controlled by the alphabetic signal decode program stored in said program ROM 152 which carries out decode processing of this text, VRAM162 which develops the alphabetic character generated by this CGROM161, the alphabetic character screen as for which decode processing was carried out by said host CPU 150, The alphabetic character on this VRAM162, and the video controller 163 which displays image information on the graphic display section 160, The touch panel input section 164 which retrieves the information on desired by inputting positional information as a result of referring to said graphic display section 160, or controls said host CPU 150, The touch panel input interface 165 which transmits the input of the positional information by this touch panel input section 164 to a system bus 151, The transmitting buffer memory 166 for registering the contents required of the information centre which does not illustrate this information as a result of retrieval by said touch panel input section 164 when the information on desired is not detected, The transceiver antenna 168 which transmits these contents of registration to said information centre etc. from the transceiver circuit 167, and receives this information, Carry out D/A conversion of the contents of said transmitting buffer memory 166, and it becomes irregular to a RF signal according to an appropriate transceiver format and an appropriate transceiver protocol. The transceiver circuit 167 which receives the RF signal which transmitted from the transceiver antenna 168 or followed said transceiver format and transceiver protocol from this transceiver antenna 168, The data incorporation / error correction section 169 which incorporates data from the RF signal which received from this transceiver circuit 167, and performs an error correction, It consists of the circumference circuits 171, such as the receiving buffer memory 170 which stores the right data incorporated in this data incorporation / error correction section 169, DMA and a timer, and a clock. Below, order is explained for an operation of this note type information terminal later on.

[0073] The note type information terminal body 135 is turned on by storing in said CD-ROM storing section 137 CD-ROM136 on which the image information which is not illustrated, and speech information and text were recorded. At this time, the control program stored in the program ROM 152 starts, the host CPU 150 controls the CD-ROM driver 154, and this CD-ROM driver 154 searchs the information which includes for example, an initial menu screen etc. from CD-ROM136. This information is read on a system bus 151 with the CD-ROM input/output interface 155, and the host CPU 150 carries out decode processing of the alphabetic signal by said alphabetic signal decode program control stored in the program ROM 152, develops this text on said VRAM162, and displays on the graphic display section 160 with a video controller 163. Or if information including said initial menu screen contains speech information, decode processing will be carried out by said ADPCM decoder 156, and this speech information will be outputted in the voice output section 157.

[0074] Moreover, if information including said initial menu screen includes image information, decode processing will be carried out in the image decoder section 159, and this image information will be displayed in the graphic display section 160 with the alphabetic character screen outputted from said video controller 163.

[0075] Here, explanation is advanced for the case where the contents of said CD-ROM136 are map information to

an example. Suppose that the menu screen as shown in drawing 10 was displayed on the graphic display sections 138 and 160, such as a liquid crystal display, as a result of said initial actuation.
[0076] Here, since a location to search is Tokyo, suppose that TOKYO is inputted. From the alphabet of the graphic display section 138, T is chosen and the part corresponding to the location of T currently displayed on said graphic display section 138 of the touch panel input sections 164 and 139 is touched.
[0077] Here, from the touch panel input interface 165, the positional information on the touch panel input section 164 is transmitted on a system bus, and the information inputted from this positional information judges the host CPU 150 to be T of text.
[0078] Here, the host CPU 150 may read each of the inputted alphabetic character from CGROM161, may display it on the graphic display section 160 each time, similarly, can specify a location direct on this touch panel input section 164, and can also control insertion, deletion, etc. also with control command sufficient also as usable in the touch panel input section 164 consequently, such as insertion and deletion.
[0079] Here, TOKYO is inputted on said touch panel input section 164, it is judged by the host CPU 150 that it is a find command like the above by touching the location on said graphic display section 138 and said touch panel input section 164 of the part currently displayed as retrieval on 160, and this host CPU 150 starts retrieval of the contents which control the CD-ROM driver 154 and correspond.
[0080] If the corresponding image information, the text, or speech information is searched as a result of retrieval, the above-mentioned decode processing will be made respectively and the voice output of the result will be carried out in a display or the voice output section 157 by said graphic display section 160.
[0081] As a result of retrieval, the corresponding information is not found, it runs short, or registration is performed to said transmitting buffer memory 166 about what was judged to be old by said host CPU 150 from the timer of the circumference circuit 171 etc., and information is required of an information centre or another information terminal etc. which is not illustrated through the transceiver circuit 167 and the transceiver antenna 168 according to said transceiver protocol and transceiver format.
[0082] Consequently, if the information on desired is retrieved in an information centre, through the transceiver antenna 168 and the transceiver circuit 167, this information will be correctly incorporated in said data incorporation / error correction section 169, and will be incorporated by the receiving buffer memory 170.
[0083] Here, if the contents of CD-ROM136 stored in the current CD-ROM storing section 137 depending on the case are old, from said CD-ROM input/output interface 155, through the CD-ROM driver 154, the contents of the receiving buffer memory 166 will be written in the field to which said CD-ROM136 corresponds, or will be rewritten.
[0084] Here, although the information on desired came to hand from the exterior using the transceiver circuit 167, the transceiver antenna 168, the data incorporation / error correction section 169, the receiving buffer memory 170, and the transmitting buffer memory 166, even when these functions be delete, in said note type information terminal, take the large ratio of a miniaturization and a display and the information terminal conventional in the field of operability be excel in this example. Below, the 3rd example is explained as a modification of a note type information terminal. The internal-block Fig. of the note type information accepting station applied to the 3rd example at drawing 11 is shown.
[0085] The antenna section 182 in which this block receives a RF signal through a wireless electric wave from the exterior, From the RF signal which received from this antenna section 182, it tunes in according to directions of CPU180. The desired video outlet 194, The tuner / the IF section 181 which outputs the audio output 195, and the video output section 187 which obtains the video outlet 194 outputted from this tuner / IF section 181, and is displayed on said liquid crystal display, The voice output section 184 which displays the audio output 195 outputted from said this tuner / IF section 181 on said flat-surface loudspeaker, In the voice output controller 183 which controls this voice output section 184, and said video output section 187, a channel selection and sound volume, The video controller 188 for making the text of the menu for making contrast and other control perform etc. display and overlay, CGROM192 which generates said control character etc., and VRAM189 for developing said video output section 187 by using as an alphabetic character screen the alphabetic character generated from this CGROM192, The control character on said video output section 187 is referred to. The touch panel input section 185 which can input positional information on a direct screen, It consists of the circumference circuits 193, such as the touch panel input interface 186 which tells the positional information inputted from the touch panel input section 185 to said CPU180, and a clock, a timer. You may think that the configuration of this example deleted the CD-ROM storing section 137 from the body layer of drawing 8 . A body electric power switch is prepared in this according to one piece. Below, the example of an operation of a note type information accepting station is explained. Suppose that the broadcasting electric-wave which sends out an image and speech information to a RF signal by many channels is received from a receiving antenna 182.
[0086] At the time of a power source ON, circumference circuit 193 grade operates, the system control program stored in the system program ROM 190 starts, with a work piece RAM 180, CPU180 generates an alphabetic character from CGROM192 according to directions of this control program, and makes VRAM189 develop an alphabetic character screen, and selection screens, such as a channel, are displayed on the graphic display section 187 with a video controller 188. When a user inputs positional information from said touch panel input section 185 with reference to the selection screen of this graphic display section 187, this positional information is told to said CPU180 through the touch panel input interface 186, and from said positional information, this CPU180 judges a desired channel etc. and controls said tuner / IF section 181.
[0087] From the RF signal obtained from the receiving-antenna section 182, according to the control signal from

said CPU180, this tuner / IF section 181 tune in a desired channel etc., outputs said video outlet 194 and audio output 195, displays the acquired image information from the video output section 187, and outputs the obtained speech information from the voice output section 184, respectively. The sound volume of this voice output is similarly controlled through the voice output controller 183 by inputting positional information from said touch panel input section 185 in that case.

[0088] The various contents of control are similarly performed each time by inputting positional information from said touch panel input section 185, and the alphabetic character generated from said CGROM192 is overlaid by the video output section 187 with a video controller 188.

[0089]

[Effect of the Invention] Even when information needed is not found inside an information record medium in the personal digital assistant equipment of this invention as a result of searching as explained in full detail above, information needed can come to hand by means of communications with an information centre etc. Moreover, when the information inside said medium is what changes every moment, newer information can be acquired from an information centre etc. on real time.

[0090] The more it excels in portability and operability and an information terminal body becomes thin even if it can take a large liquid crystal display and has said means of communications when the portable information terminal of a note type is considered especially, the more effectiveness which is referred to as that a sound can be heard from a direct display is also generated. Furthermore, it becomes possible by the ability enciphering and sending information to perform protection of privacy or a secret matter, or informational charging.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the fundamental block diagram of one example of this invention.
[Drawing 2] It is the external view of a portable player where the 1st example of this invention is applied.
[Drawing 3] It is the internal-block Fig. of the portable player of drawing 2 .
[Drawing 4] It is drawing showing the modification of the appearance of the portable player of drawing 2 .
[Drawing 5] It is the external view of the reception pack of charged satellite broadcasting service.
[Drawing 6] It is the internal-block Fig. of the reception pack of drawing 5 .
[Drawing 7] It is drawing showing the concrete example of use of this invention.
[Drawing 8] They are the appearance/block diagram of the note type information terminal with which the 2nd example of this invention is applied.
[Drawing 9] It is the external view of the note type information terminal of drawing 8 .
[Drawing 10] It is drawing showing an example of a menu screen.
[Drawing 11] It is the internal-block Fig. of a note type information terminal.
[Drawing 12] It is the block diagram of conventional personal digital assistant equipment.
[Description of Notations]
1 [— The contents registration means of a demand, 5 / — Means of communications, 6 / — Receiving contents storing buffer.] — A mass information record medium, 2 — A retrieval means, 3 — A display means, 4

[Translation done.]